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The general similarity of the four lists is shown by the fact that the four combined include only 40 species, which is only 6 less than the list for all New England and New York, north of Connecticut. The missing six are *Dryopteris fragrans*, *D. Filix-mas* and four coastal plain species, namely the two Woodwardias, *Dryopteris simulata*, and *Lygodium*.

All the stations report *Ophioglossum vulgatum*. Of the seven Botrychiums named in Gray's Manual the Green Lakes and Willoughby have all except *B. angustisegmentum*. The other two localities lack *B. Lunaria*, and Dorset fails to report *B. simplex*. It is hardly conceivable that it is not there.

AUBURNDALE, MASS.

The Irresistible Charm of the Ferns

EDWARD HALE CLARKSON

"Why a fern should fill one mind with strong emotion and a spray of moss another" wrote Philip Henry Gosse in his "Romance of Natural History" nearly sixty years ago "we can give no reason. Yet that such is a fact every admirer of nature who has an element of poetry in his soul will admit." "The desire" said Humboldt "which we feel to behold certain objects, is not excited solely by their grandeur, their beauty, or their importance. In each individual this desire is interwoven with pleasing impressions of youth, with early predilections for particular pursuits and the love of an active life."

How vividly I recall a most eventful walk with a congenial friend and nature-lover on a certain crisp and sunny autumn day many years ago, to a charming bit of woodland just across the Merrimac River from Newburyport! Climbing a stone wall, in a few minutes

we were apparently in the heart of a rather open cedar forest. All around were fine specimens of these trees, some with a dark olive foliage, others of a lighter green and many of them profusely covered with clusters of beautiful grey-blue berries. Mossy ledges protruded from the higher parts of the ground, their sloping tops and sides adorned with great sheets of the Polypody. All about were barberry bushes with their pendent clusters of crimson fruit, and at my feet was the decayed stump of what was once a big tree, now completely covered with gay red-tipped coral-moss. But most wonderful of all, I saw for the first time growing on the sides of the rocky knolls, the rosettes of the Ebony Spleenwort, surmounted by the tall, graceful fertile fronds with their polished dark brown stems. It was a case of love at first sight, and right then and there began my interest in our native ferns which was destined to later become a veritable hobby.

In the literature of England and Scotland we find many references to the beauty of the ferns or to some romantic superstition connected with them.

In Guy Mannering, for instance, the farmer of Charlie's Hope, honest Dandie Dinmont, after telling Harry Bertram that the sheriff is searching everywhere for the gipsy, Meg Merilies, and that a reward of fifty pounds has been offered for her apprehension, says "But she'll no be taen unless she likes for a' that." "And how comes that?" asks Bertram. "Oh, I dinna ken," replies Dinmont. "I daur say it's nonsense, but they say she has gathered the fern seed and can gang ony gate she likes like Jock-the-Giant-killer wi' his coat o' darkness and his shoon o' swiftness."

Any one who has read Blackmore's superb novel "Lorna Doone" will remember how narrowly John Ridd escaped a violent death at the hands of his mortal enemies, the Doones of Bagworthy, when those

desperate men led by the great villain, Carver Doone, armed to the teeth and on murder bent, passed by in the woods of Plovers Barrows. Fortunately he heard them coming through the bushes before they saw him. "I had no time to fly," he said, "but with a sort of instinct threw myself flat in amongst the thick fern and held my breath and lay still as a log." Thanks to the "thick fern" John escaped discovery, and later on led an armed expedition into Doone Valley which destroyed this band of cut throats and robbers who had terrorized the neighborhood for so many years.

Although it is true that not nearly as many references to the ferns are to be found in the books of our writers as in those of England and Scotland, nevertheless that there is, here in America, a most wide-spread and enthusiastic interest in these beautiful plants can be easily shown.

"If you wish to know the ferns," wrote Mrs. Frances Theodora Parsons, in her easy and graceful style, "you must follow them to nature's most sacred retreats. In remote, tangled swamps, overhanging the swift noiseless brook, in the heart of the forest, close to the rush of the foaming waterfall, in the depths of some dark ravine, or perhaps high upon mountain ledges, where the air is purer, and the world wider, and life more beautiful than we had fancied, these wild graceful things are most at home."

In his book on "Ferns" beautifully illustrated by photographic reproductions that clearly show the artistic temperament of the author, Campell E. Waters thus describes the Bulblet Bladder fern. "Sometimes in shaded ravines we come across patches of this fern with its fronds hanging down over the moist rocks as if trying to hide their bareness. The delicate leaf-like curtain formed of the slender intertwining fronds is one of the most beautiful sights of the woods. There

is an airiness, a gracefulness about the the pose of these ferns, and their color is such a delicate fresh green that it has few rivals among our ferns. It is a worthy member of that chosen company dwelling in moist limestone ravines. We may expect rare ferns even on an exposed limestone cliff, but where the rock is shaded and dripping with moisture it seems as if nature were trying to outdo herself. The rocks seem to retain some of the life of past ages, and the shells slowly formed in the depths of the sea, are now wasted away in supporting a luxuriant vegetation."

- "What red-letter days we fern-hunters have," wrote James A. Bates in the Fern Bulletin in 1894.

"I don't think we are naturally any more enthusiastic than other people, but we can tell just when and where we found such and such little rock ferns years ago, and now and then the finding of a rare one in an unexpected place does us more good than it would to find a purse of money (the owner would be sure to come for that!).

"My friends will probably testify that I am a quiet sober, matter-of-fact sort of character, but I am afraid I just stood still and shouted hurrah! when I first saw the *Woodwardia Virginica*."

Willard N. Clute wrote most charmingly regarding the Chittenango Falls locality for the Harts Tongue in the Fern Bulletin of October, 1897. "It is a wild and beautiful locality, just the spot to serve as a hiding place for botanical rarities. A large stream, the Chittenango, hurrying northward to Oneida Lake, here makes a plunge of many feet over a double series of falls, and winds away through a narrow wooded glen, hemmed in by great precipices of corniferous limestone, which echo the roar of the waters and are always damp with their spray. The shadier parts of these cliffs shelter the Walking Fern and Slender

Cliff Brake, while from every dripping ledge, the long tapering fronds of the Bulbiferous Bladder Fern hang like a curtain. On the sunnier walls the Purple Cliff Brake and Rue Spleenwort find a home. Ever since the Chittenango cut its channel through these rocks, wind and weather have been steadily at work tearing them to pieces. Huge banks of rock fragments slope from the base of the cliffs to the water. Over them the falling leaves of centuries have spread a soft yielding carpet of mould that affords a congenial soil for such trees as Basswood, Hemlock, Striped Maple, Cedar and others. In the shade of these, where there is always semi-twilight, the Harts Tongue elects to grow . . . so lightly are the plants anchored in the yielding soil that they may be easily lifted out, roots and all, without digging. We find ourselves wondering how they manage to exist with such a precarious foothold, but the number of young plants to be seen testifies to their vigour. In September the spores are ripe and then nearly every frond is loaded on the under side with velvety brown lines that look like embroidery."

"The Ferns," wrote George E. Davenport in the Bulletin of 1902, "appeal irresistibly to everything that is best within us."

It is not always the largest and showiest of the ferns that gets the most attention. Writing of the little Rusty Woodsia, C. F. Saunders said, "Woodsia Ilvensis is one of the most interesting of our native ferns, and the unpretentious but sturdy, unwavering fight of the furry little plant with the sun and frost will speedily win for it, I think, a place in the heart of anyone who will give it due attention."

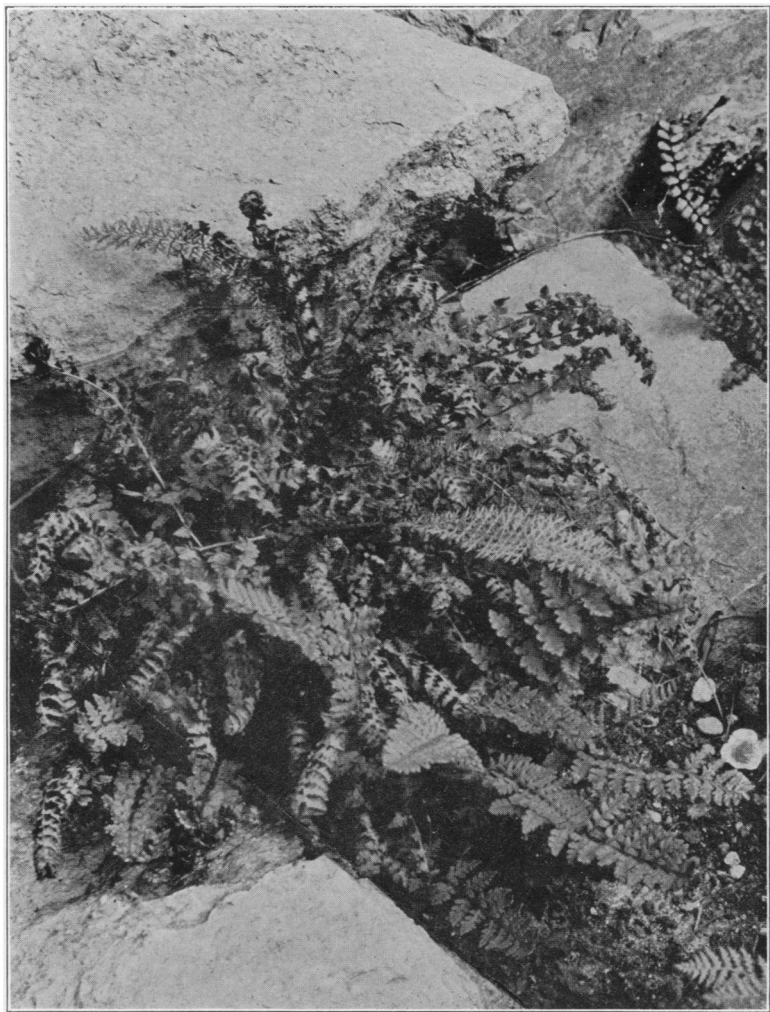
To prove that this little fern's struggle for existence is very real, two photographic reproductions are shown. The first (Plate 7) pictures a colony with fronds curled up, and apparently dying as the result of very dry

weather; the second, (Plate 8) the same colony as it appeared forty-eight hours later, after a good soaking rain, in as good condition as ever. When the period of dry weather is long drawn out, it sometimes happens that the colonies of this fern on the driest parts of the rocks are too far gone to recover.

Quotations from other most interesting American writers could be given if space permitted, but surely enough evidence has been presented to prove "the irresistible influence that has captured and controlled the intellect" of many of us.

Of course we are all duly impressed by the technical and scholarly descriptions of the ferns by our recognized experts, and we realize that they are a most important and necessary part of this publication. Yet I feel that articles such as I have quoted, from the pens of those who are enthusiastic writers on the less technical phase of what might be termed "the romance of the ferns in their homes" would be sadly missed from FERN JOURNAL. By all means let us have more of them!

For, to quote from our friend Gosse once more, "there are more ways than one of studying natural history. There is Dr. Dryasdust's way which consists of mere accuracy of definition and differentiation, statistics as harsh and dry as the skin and bones in the museum where it is studied. There is the field-observer's way, the careful and conscientious accumulation and record of facts bearing on the life history of the creatures, statistics as fresh and bright as the forest or meadow where they are gathered in the dewy morning. And there is the poet's way who looks at nature through a glass peculiarly his own, the aesthetic aspect, which deals, not with statistics but with the emotions of the human mind." "In my many years wanderings through the wide field of natural history, I have always felt toward it something of a poet's heart though destitute of a poet's genius."



WOODSIA ILVENSIS

Curled up and drooping after long period of dry weather.



WOODSIA ILVENSIS

The same colony 48 hours later, refreshed by a good soaking rain.

"As Wordsworth so beautifully says,
'To me the meanest flower that blows can give
Thoughts that do often lie too deep for tears.'"
NEWBURYPORT, MASS.

Recent Fern Literature

Dr. W. N. Steil has published a careful and detailed study of apogamy in *Nephrodium hirtipes* Hook.¹ This species appears to depend entirely on asexual reproduction. In his cultures, Dr. Steil avoided conditions likely to induce apogamy; fertilization took place in the usual fashion on prothallia of other species grown in the same cases. But those of *N. hirtipes*, though they developed normally from the spores, produced no sexual organs in most instances and in any case only antheridia. The plant of the spore-bearing generation always arose as a direct outgrowth from the prothallium. In at least one other apogamous species, fusions between the vegetative cells of the prothallium have been observed to precede the growth of the young plant; but even this substitute for fertilization was lacking in *N. hirtipes*.

Dr. Steil gives a detailed account of the cell-changes which accompany the growth of spores in this species. They present some unusual features. In particular, the mother-cells from which the spores are eventually formed undergo a partial division; never fully completed, at an early stage of their growth and, probably because of this, sometimes produce six spores to the cell instead of the usual four—the latter a phenomenon never before observed in cryptogamous plants, though a similar one has been noted in certain phaenogams.

¹ Steil, W. N. Apogamy in *Nephrodium hirtipes* Hk. Annals of Bot. 33: 109-132, pls. 5-7. Jan., 1919.